

Remarks/Arguments:

Claims 1-8, 10, 15, 16, and 18-24 are the pending claims in this application. Claims 1 and 18 are currently amended. Support for the amendments may be found, for example, at page 2, lines 11-19 and page 4, lines 1-4 of the specification. No new matter has been added.

Claims 1-8, 10, 15, 16, and 18-23 stand rejected under 5 U.S.C. § 103(a) as unpatentable over Foerster et al. (U.S. Patent No. 6,149,973). Claim 24 stands rejected as unpatentable over Foerster in view of Ogawa et al. (U.S. Patent No. 5,733,352). Applicant respectfully traverses these rejections. For the reasons discussed below, Applicant believes that these rejections are improper, and the claims distinguish over the cited references.

Claim 1 recites, in part:

A method of manufacturing a catalysed ceramic **wall-flow filter comprising a plurality of channels**, which method comprising the steps of:

- (a) **reducing the pressure in a pore structure of the channel walls** relative to the surrounding atmospheric pressure **to provide evacuated channel walls**,
- (b) **contacting a surface of the evacuated channel walls** with a liquid containing at least one catalyst component or a precursor thereof, wherein the liquid permeates the pore structure of the evacuated channel walls . . .
wherein **reducing the pressure in the pore structure** of the wall-flow filter **occurs prior to contacting** the surface of the evacuated channel walls with the liquid; and **the plurality of channels in the wall-flow filter are plugged at an inlet end or an outlet end of the wall-flow filter**.

"To establish a *prima facie* case of obviousness, ... the prior art reference (or references when combined) must teach or suggest all the claim limitations." M.P.E.P. §2143. Additionally, as set forth by the Supreme Court in *KSR Int'l Co. v. Teleflex, Inc.*, 550 U.S. 398 (2007), it is necessary to identify a reason that would have prompted a person of ordinary skill in the relevant field to combine the prior art elements in the manner claimed. A prior art reference must be considered in its entirety, i.e., as a whole, including portions that would lead away from the claimed invention. *W.L. Gore & Associates, Inc. v. Garlock, Inc.*, 721 F.2d 1540 (Fed. Cir. 1983), *cert. denied*, 469 U.S. 851 (1984). See M.P.E.P. § 2141.02(VI).

Foerster fails to disclose or suggest a wall-flow filter. In particular, Foerster fails to disclose that the plurality of channels in the wall-flow filter are plugged at an inlet end or an

outlet end of the wall-flow filter. The Office Action indicates that the claimed invention is not limited to a wall-flow filter because it is described in the specification as only typical. Office Action page 3, item 6a. Applicant respectfully disagrees because it is the claims which define the invention and not the specification. In any event, Applicant has amended claims 1 and 18 to clarify that the claimed invention is directed to a wall-flow filter, where a wall-flow filter has a plurality of channels plugged at either an inlet end or an outlet end of the wall-flow filter. See page 2, lines 11-18 of the specification.

The Office Action indicates that "the Foerster patent contemplates a wall-flow filter for the reasons provided in the prior Office action" (Office Action page 3, item 6a), but it is not clear how Foerster supposedly contemplates a wall-flow filter. Foerster relates to a process for coating flow channels of a honeycomb flow-through catalyst carrier by filling the vertically oriented flow channels with the coating dispersion and subsequently emptying the flow channels by connection of a vacuum tank. See col. 4, lines 33-54 of Foerster. The claimed invention, however, relates to a ceramic wall-flow filter. Thus, while a wall-flow filter can have the *shape* of a honeycomb carrier, it is different from a honeycomb carrier in that in a wall-flow filter, the flow path of the gas is *across* the walls. Foerster discloses a honeycomb *flow-through* catalyst in which the catalyst flows along the length of the channels of the honeycomb, contacting catalyst as it flows axially. Foerster never expressly or impliedly discloses or contemplates a wall-flow filter. Because Foerster fails to disclose a wall-flow filter, a *prima facie* case of obviousness has not been established and claim 1 is in condition for allowance.

Additionally, Foerster fails to disclose reducing the pressure in the pore structure of the wall-flow filter *prior to* contacting the surface of the evacuated channel walls with the liquid. The Office Action states that "the claims do not require a vacuum step as a discrete step applied prior to contacting the substrate with a liquid." Office Action page 4, item 6b. Applicants respectfully disagree. Claim 1 recites *reducing the pressure* in a pore structure of the channel walls . . . *to provide evacuated channel walls [and]* contacting a surface of **the** evacuated channel walls. "The evacuated channel walls" clearly relies upon the limitation of reducing the pressure to provide evacuated channel walls (a discrete, first step). Applicant, however, has amended claim 1 to further recite "reducing the pressure in the pore structure of the wall-flow filter occurs *prior to* contacting the surface of the evacuated channel walls with the liquid." Thus, as claimed, there is a first step of reducing the pressure to provide evacuated channel

walls and a second step of contacting the surface of the evacuated channel walls with the catalyst component/precursor.

Foerster never indicates that the vacuum step may be applied first, namely before the step of contacting the substrate with a liquid. On the contrary, Foerster discusses the vacuum concept in only one of two ways: (1) removing the coating dispersion from the flow channels, i.e., extraction impulse (throughout Foerster; See e.g., col. 5, lines 45-53); or (2) filling the flow channels by application of a partial vacuum (col. 5, lines 18-22 of Foerster). In the invention as claimed in step (a) of claim 1, however, the vacuum is not applied for either of these reasons. Rather, the vacuum is first applied to provide the evacuated channel walls such that when they are contacted with the catalyst component/precursor (e.g., pumped in), better permeation of the liquid in the channel walls occurs. See page 11, lines 5-18 of the specification ("Since the pore structure of the filter material has been evacuated, the liquid components permeate the walls of the channels.").

Additionally, Foerster never contemplates reversing or changing the order of the steps. Foerster clearly specifies first (a) filling the flow channels, then (b) emptying the flow channels by an extraction impulse. See col. 5, lines 45-58 of Foerster. Foerster simply does not teach or suggest reducing the pressure to provide evacuated channel walls prior to contacting the surface of the evacuated channel walls with the catalyst component/precursor. In particular, Foerster fails to teach or suggest this while the pressure is reduced, as claimed in claim 3.

The Office Action states "the selection of any order of performing process steps is *prima facie* obvious in the absence of new or unexpected results." Office Action page 4, item 6b. Applicant submits that this is not a simple case of selecting any order of performing the steps because Foerster does not contemplate reducing pressure to provide evacuated channel walls in a wall-flow filter. Because all of the process steps are not present in Foerster, a *prima facie* case of obviousness has not been established.

Furthermore, it would not have been obvious to evacuate the channel walls first because there is no reason provided to do so. The evacuated channel walls are important in the claimed invention because of the nature of a wall-flow filter. See e.g., page 2, lines 11-18 of the specification. While some porosity may exist in a honeycomb flow-through carrier, it is designed to permit axial flow along the channels, not flow across the walls. In fact, if alternating ends of a typical honeycomb carrier were plugged to attempt to drive the flow

across its walls, the resulting back pressure would become impractically high. Stated another way, the walls of a honeycomb carrier are essentially impermeable to the flowing gas (including gas at a reduced pressure), while the walls of a wall-flow filter certainly allow gas (including gas at a reduced pressure) to flow across them. As a consequence, it would not have been obvious to evacuate the channel walls of the honeycomb carrier because there would be no reason to do so in view of the differing nature of a honeycomb flow-through carrier and a wall-flow filter. As no reason is provided that would have prompted a person of ordinary skill art to evacuate the channels of the honeycomb carrier of Foerster, a *prima facie* case of obviousness has not been established.

Moreover, in addition to the arguments presented above, and again with emphasis on claim 3, Foerster, in fact, teaches away from the claimed invention. With respect to the extraction impulse, Foerster seeks to apply a vacuum for "rapid emptying" and to "secure prevention of blocked flow channels." The partial volume is the "driving force for removal of the coating dispersion from the flow channels and for the subsequent air flow." See col. 5, line 40 through col. 6, line 6 of the specification. As already discussed, the claimed invention seeks to allow the catalyst component/precursor to permeate the channels walls. It is because the pore structure of the filter material has been evacuated that the liquid components permeate the walls of the channels to the extent achieved by the present invention. Page 11, lines 5-18 of the specification. Thus, Foerster teaches away from the claimed invention by teaching the use of a vacuum for rapid emptying/extraction of the coating.

As Foerster fails to teach each of the claimed limitations, fails to provide any reason to evacuate the channel walls first, and teaches away from the claimed invention, Applicant respectfully submits a *prima facie* case of obviousness has not been established. Thus, claim 1 should be in condition for allowance. Claims 2-8, 10, 15, 16, and 22-24 depend from claim 1, and therefore should each be allowed as dependent thereon.

Claim 18, while not identical to claim 1, recites similar features. For example, claim 18 recites that the apparatus is for use in manufacturing **a catalysed ceramic wall-flow filter having filter walls**, the plurality of channels in the wall-flow filter are **plugged at an inlet end or an outlet end** of the wall-flow filter, and goes on to specify: "means for reducing pressure **in the isolated channels** to below the surrounding atmospheric pressure thereby to establish a vacuum **in the pore structure of the filter walls** to provide **isolated and evacuated channels**, at least one reservoir for holding a liquid containing at least one catalyst

component or a precursor thereof and **means for dosing the isolated and evacuated channels** with a pre-determined quantity of the liquid." As Foerster fails to teach or suggest the features of claim 18, a *prima facie* case of obviousness has not been established. Claims 19-21 depend from claim 18, and therefore should each be allowed as dependent thereon.

Claim 24 stands rejected as unpatentable over Foerster in view of Ogawa et al. As Ogawa et al. fails to remedy any of the deficiencies discussed above with respect to Foerster, a *prima facie* case of obviousness has not been shown.

Conclusion

For all of the foregoing reasons, Applicant respectfully requests reconsideration and allowance of the claims. Applicant invites the Examiner to contact his undersigned representative if it appears that this may expedite examination.

Respectfully submitted,



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Enclosure

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